

Ultra-low power and wearable CO2 sensors

Completed Technology Project (2017 - 2018)



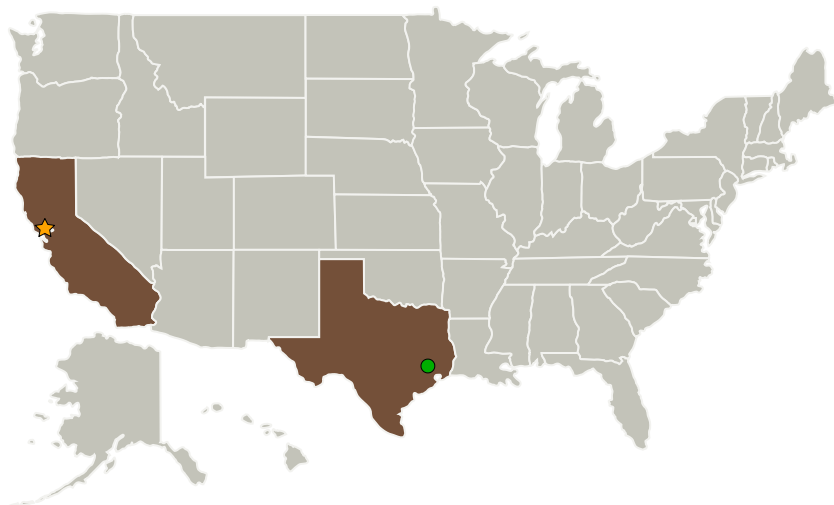
Project Introduction

IRIS architecture, nano chemical sensor, and e-textile antenna will be integrated/tested to make it wearable, mobile, peel-stick or fit where it is needed for chemical sensing. We will utilize the architecture by getting communications for free through RFID and low power thermocouple interface for low power and long life.

Anticipated Benefits

NASA crew members need a class of deployable air quality sensor that can operate for months-to-years without needing to be recharged target, operation on a single battery for at least the entirety of an ISS tour, and quietly transfer data logging/analysis with no crew member intervention. With low power and small footprint nanosensors and RFID, we can provide long life, one-button operation, mobile and always-on environmental sensing capability to meet the needs above. We plan to integrate ARC CO2 nanosensor with JSC low power RFID platform to achieve: 1) low power in mW; 2) small size of 1.36 x 1.36; 3) autonomous and long-life of ~9 years operation.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★ Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
● Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations

California	Texas
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Project Website:

https://www.nasa.gov/directorates/spacetech/innovation_fund/index.html#.VC

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Center Innovation Fund: ARC CIF

Project Management

Program Director:

Michael R Lapointe

Program Manager:

Harry Partridge

Principal Investigator:

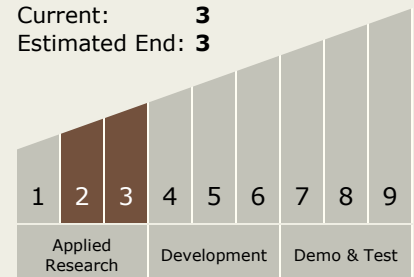
Jing Li

Technology Maturity (TRL)

Start: 2

Current: 3

Estimated End: 3



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.3 Human Health and Performance
 - └ TX06.3.4 Contact-less / Wearable Human Health and Performance Monitoring

Target Destinations

Earth, The Moon, Mars